REMARKS

In the Office Action, claims 14-26 were rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,773,692 to Pecharsky et al. ("Pecharsky"). Claims 27 and 28 are amended herein. Claims 29-32 have been added. Applicants respectfully submit that the rejections have been overcome for at least the reasons below.

Amended claim 27 recites a hydrogen occluding material in the form of a fine powder capable of hydrogenation and/or dehydrogenation of hydrogen molecules or hydrogen atoms at about 200°C or below and under adequate control of pressure. The hydrogen occluding material includes an aluminum hydride having a formula AlH_x, where $0 \leq x \leq 3$, a dopant functioning as a catalyst, wherein the dopant includes at least one species selected from the group consisting of transition metals belonging to groups III to V of the periodic table and chromium, iron, nickel, and alkali metals, and compounds thereof, and wherein an amount of the dopant ranges from about 0.2 mol% to about 10 mol% of an amount of the aluminum hydride.

Similarly, claim 28 has been amended to recite, at least in part, a dopant functioning as a catalyst, wherein the dopant includes at least one species selected from the group consisting of transition metals belonging to groups III to V of the periodic table and chromium, iron, nickel, and alkali metals, and compounds thereof, and wherein an amount of the dopant ranges from about 0.2 mol% to about 10 mol% of an amount of the aluminum hydride.

At the outset, Pecharsky does not disclose wherein the dopant includes at least one species selected from the group consisting of transition metals belonging to *groups* (i.e., columns) III to V of the periodic table in addition to chromium, iron, nickel, and *alkali* metals, and compounds thereof. At best, Pecharsky arguably discloses that the catalyst may be broadly selected from *any* transition metal of the 3rd through the 5th *period* (i.e., rows) of the periodic table. (See, Pecharksy, col. 4, lines 47-48). Indeed, the disclosure in Pecharsky very generally refers to *any* transition metal (i.e., *periods* 4, 5 and 6 of the periodic table), and clearly does not recognize the claimed dopant including at least one species selected from the group consisting of transition metals belonging to *groups* (i.e., columns) III to V of the periodic table in addition to chromium, iron, nickel, and *alkali* metals, and compounds thereof.

Accordingly, Pecharsky does not disclose a dopant that is selected from the group consisting of transition metals belonging to *groups* III to V of the periodic table and chromium, iron, nickel, and *alkali* metals, and compounds thereof, as recited in amended claims 27 and 28.

Moreover, Applicants have surprisingly discovered that by isolating AlH_3 alone and using it as a new hydrogen occluding material that it would release as much hydrogen as 10.0 wt% theoretically. (See, Specification, pg. 6, lines 14-18). Applicants show in Example 1 and in Fig. 1 that AlH_3, which is the hydrogen occluding material according to the present invention, releases hydrogen at a lower temperature than $NaAlH_4$. It is also apparent that AlH_3 releases hydrogen in one stage, whereas $NaAlH_4$ releases hydrogen (due to thermal dissociation) in two stages. The hatched area in Fig. 1 corresponds to the amount of hydrogen released. Therefore, it is apparent that AlH_3 releases more hydrogen than $NaAlH_4$. *The amount of hydrogen released from AlH_3 is 9 wt%, which is close to the theoretical value.* (See, Specification, pg. 11, line 25 to pg. 12, line 2).

On the contrary, alanates ($XAlH_4$, where X = Na, Li, and the like) typified by $NaAlH_4$ mentioned above, are much more limited in the amount of hydrogen released (which is theoretically limited to 5.6 wt%). (See, Specification, pg. 4, line 24 to pg. 5 line 5). Higher hydrogen content alanates or complex alkali metal derivatives of aluminum hydrides (i.e., where H_n is an integer between 3 and 6) such as $LiAlH_4$ appear to be the focus of Pecharsky. Even to the extent that Pecharsky provides for solid hydrides according to the formula $M'_xM_y(AlH_n)_z$, (where M' is an alkali metal; x is 0 or 1; M is an alkali earth metal; y is an integer between zero and three; and z is an integer between zero and seven), Pecharsky does not disclose an amount of dopant ranging from about 0.2mol% to about 10mol% *of an amount of the aluminum hydride.* Although Pecharsky discloses a very broad range of dopant percentages ranging in amounts from 0.001-50 mol%, Pecharsky does not disclose a dopant amount ranging from about 0.2mol% to about 10mol% *of an amount of the aluminum hydrid*, as in the claimed invention. (See, Pecharky, col. 4, line 59). Indeed examples 1-4 in Pecharsky only relate to catalytic amounts relative to $LiAlH_4$, and not relative to AlH_x, where $0 \leq x \leq 3$, as in the claimed invention. Accordingly, the solid hydrogen occluding materials exemplified in Pecharsky are limited to a much lower hydrogen capacity.

For at least the reasons given above, Applicants believe that Pecharsky fails to anticipate claims 27 and 28. Accordingly, Applicants respectfully request the withdrawal of the anticipation rejection with respect to claims 27 and 28.

With regard to new claims 29 and 31, Pecharsky does not disclose where the dopant includes at least one species selected from the group consisting of transition metals belonging to the groups III to V of the periodic table, *and* at least one species selected from the group consisting of chromium, iron, nickel, and alkali metals, (i.e., Li, Na, K, Rb, Cs and Fr), and compounds thereof. With regard to new claims 30 and 32, Pecharsky does not disclose where the dopant includes at least one species selected from the group consisting of transition metals belonging to the groups III to V of the periodic table, *and* at least one species selected from the group consisting of alkali metals, and compounds thereof.

Accordingly, Pecharsky does not disclose the dopant as claimed in claims 29-32. And thus, claims 29-32 should be considered patentable over Pecharsky.

For the foregoing reasons, Applicants submit that the present application is in condition for allowance and earnestly solicit reconsideration of same.

Respectfully submitted,

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